

0-ABBS 029

NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER SAN D--ETC F/G 15/7
CONTINGENCY MANAGEMENT: DEVELOPMENT OF MANAGEMENT PROBLEMS X TE--ETC(U)
MAY 80 L M DOHERTY, S L DOCKSTADER, B FEHER
UNCLASSIFIED NPRDC-TR-80-25

NL

1 of 1
ADLA
UNC 029

END
DATE
FILMED
7-80
DTIC



Linda M. Doherty
Steven L. Dockstader
Bela Feher
Robert L. Holzbach

JUN 3 1980

A

1000

DESTROYED
Apr 1964
SECRET
Declassified

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NPRDC-TR-80-25	2. GOVT ACCESSION NO. AD-A085029	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) CONTINGENCY MANAGEMENT: DEVELOPMENT OF MANAGEMENT PROBLEMS X TECHNIQUES MATRIX.		5. TYPE OF REPORT & PERIOD COVERED Final Report
7. AUTHOR(s) Linda M. Doherty Bela Feher Steven L. Dockstader Robert L. Holzbach		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Z0107-PN.04A
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 10 May 1980
		13. NUMBER OF PAGES 31
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Contingency Management Organizational Analysis Management Organizational Development Management Problem Solutions Organizational Effectiveness Management Techniques Management Problems		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A contingency management framework, which focuses on the usefulness of a management technique when applied to a particular problem, served as the basis for this study. About 500 Navy middle management problems were identified, analyzed, and systematically reduced to eight clusters of problems through hierarchical clustering and factor analysis. Next, 31 relevant management techniques were classified, based on implementation tasks required, and reduced to six clusters through a multidimensional analysis. The six management technique clusters and the eight		

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

management problem clusters were then incorporated into a Problems x Techniques Matrix, where each cell represents organizational outcomes prior to and following application of a specific management technique to a particular management problem.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

FOREWORD

This work was conducted as part of subproject Z0107-PN.04A, Improved Personnel Utilization, under the sponsorship of the Chief of Naval Operations (OP-01). The purpose of the research effort was to develop a research methodology to evaluate the effectiveness of selected management techniques for solving common middle-management operational problems in Navy settings. This report describes how clusters of managerial problems and techniques were developed and incorporated into an empirical model. The results of this report may be useful to management instructors in Navy courses, Navy managers who want to test the effectiveness of a management technique, and researchers conducting management studies in applied military settings.

Appreciation is extended to Professor William Howard Church of the Department of Administrative Science, Naval Postgraduate School, for his generous contribution of case materials and expertise to the development of a taxonomy of operational Navy problems. Appreciation is also expressed to those who served as judges in scaling management techniques or made various technical contributions throughout the work.

A previous version of this report was presented at the Military Testing Association Meeting, October 1979, San Diego, CA.

DONALD F. PARKER
Commanding Officer

SUMMARY

Problem

Navy managers, both uniformed and civilian, are faced with a variety of operational and organizational problems. In attempting to resolve these problems, managers often adopt techniques and strategies from the civilian business and industrial world. Although this would seem to be a logical approach, borrowing managerial techniques from other settings entails risks with regard to both the validity of the management techniques and their applicability to Navy settings.

Objective

The long-term purpose of this research and development effort is to develop a tested array of management techniques to ameliorate middle management problems in Navy settings. The purposes of the effort described here were to (1) identify the organizational problems perceived by Navy managers, (2) describe available management techniques, and (3) provide a conceptual framework and empirical model for designing organizational change studies.

Approach

A contingency management framework, which focuses on the usefulness of a management technique when applied to a particular problem, served as the basis for this study. About 500 Navy middle management problems were identified, analyzed, and systematically reduced to eight clusters of problems through hierarchical clustering and factor analysis. These clusters were comprised of problems in (1) Authority/Responsibility, (2) Planning and Coordination, (3) Initiative and Motivation, (4) Conflict, Cooperativeness, and Communication, (5) Performance, (6) Supervisory Behavior, (7) Job Skills, and (8) External Policies. Next, 31 relevant management techniques were classified, based on implementation tasks required, and reduced to six clusters through a multi-dimensional analysis. These clusters were comprised of techniques in (1) Organizational Development, (2) Decision Analysis, (3) Management Planning, (4) Industrial Engineering, (5) Job Redesign, and (6) Incentive Management.

Results and Conclusions

The management problem clusters and management technique clusters were incorporated into a Problems x Techniques Matrix. In a contingency approach, a cell entry in this matrix would indicate the usefulness of a particular management technique applied to a particular management problem. Since the entire array of problems may exist in varying degrees in any given organization, it appears that comprehensive assessment of organizational functioning prior to and following intervention is appropriate for evaluating the effectiveness of a management technique.

Future Research Considerations

1. Evaluation studies of management techniques should be conducted in Navy organizations. Such studies should include a diversity of organizational types and management problems.
2. Organizational assessment instruments should be developed and integrated into future organizational research efforts to diagnose management problems and evaluate the effectiveness of management techniques.

PRECEDING PAGE BLANK-NOT FILMED

CONTENTS

	Page
INTRODUCTION	1
Problem	1
Background	1
Objective	3
APPROACH	3
ANALYSIS OF MANAGEMENT PROBLEMS AND TECHNIQUES	4
Management Problems	4
Management Techniques	5
Problems x Techniques Matrix	8
DISCUSSION AND CONCLUSIONS	8
FUTURE RESEARCH CONSIDERATIONS	9
REFERENCES	10
APPENDIX A--EXAMPLES OF EVENTS LEADING TO AND BEHAVIOR MANIFESTATIONS OF MANAGEMENT PROBLEMS	A-0
APPENDIX B--DESCRIPTIONS OF MANAGEMENT TECHNIQUES	B-0
DISTRIBUTION LIST	

INTRODUCTION

Problem

The Navy, like other organizations, is experiencing pressures for improved efficiency and more effective use of its personnel resources. Congress has recently reduced manpower levels, as well as budgets, for various defense items. The cost of personnel resources has been rising, while the demands on personnel have increased due to reduced manning levels, more complex missions and tasks, technological advancement, and higher performance requirements.

Navy managers, both uniformed and civilian, are the persons most responsible for dealing with these problems. They must creatively cope with the externally created pressures while orchestrating the internal dynamics of their work unit so that its mission is accomplished. In attempting to resolve these problems and to maximize unit effectiveness, managers often adopt techniques and strategies from the civilian business and industrial world. Although this would seem to be a logical approach, borrowing managerial techniques from other settings entails two dangers. First, the techniques may not be effective in solving the problems they were intended to remedy and could, in fact, waste organizational resources. Second, they may not be useful when applied to Navy settings, regardless of their usefulness in the civilian world. There are generally several unique factors in Navy environments, such as the civilian-military personnel mix, the dual authority hierarchy, and the personnel rotation system, that may preclude the successful transfer of managerial techniques.

Background

Modern organization theory takes a contingency perspective of the relationship among various factors contributing to organizational behavior and outcomes. Early studies concluded that organizational effectiveness depended on the "goodness of fit" between its structure and its environmental demands (Burns & Stalker, 1961; Lawrence & Lorsch, 1967; Perrow, 1970; Thompson, 1967; Woodward, 1965). This conclusion did not agree with the previously dominant universalist principle; that is, that "one best way" should be adopted in all situations. Recently, the contingency concept has been developed further in several specific areas.

In the area of organization design, Galbraith (1973, 1977) interpreted the contingency perspective in terms of information processing and strategies for satisfying organizational requirements to reduce uncertainty in mission performance. He presented a comprehensive framework for alternative strategies of reducing uncertainty and suggested that the organization's choice of strategy depends on its circumstances and the values it places on the various outcomes.

Schmuck and Miles (1971) conceptualized an "OD Cube" (Organizational Development) for classifying change interventions in educational settings. This cube has three factors: (1) diagnosed problems (e.g., goals and plans, role definition, leadership), (2) the focus of attention (e.g., person, role, team), and (3) the mode of intervention (e.g., training, data feedback, technostuctural activity). According to this model, problems must be diagnosed and decisions regarding focus of attention made before a particular mode of intervention can be selected. In other words, the mode of intervention should be contingent on the nature of the other two factors.

In the area of management, Kast and Rosenzweig (1973) surveyed contingency views of organization and management and attempted to determine how they related to management practice. They define the contingency view as follows:

The contingency view seeks to understand the interrelationships within and among subsystems as well as between the organization and its environment and to define patterns of relationships or configurations of variables. It emphasizes the multivariate nature of organizations and attempts to understand how organizations operate under varying conditions and in specific circumstances. Contingency views are ultimately directed toward suggesting organizational designs and managerial actions most appropriate for specific situations. (p. 313)

This definition is captured in Kast and Rosenzweig's tentative conceptual model, which is intended to represent the present status of contingency views of organization and management. Their model not only includes the environment, but also the overall organizational system and its important subsystems (i.e., goals and values, technical, structural, psychosocial, and managerial). Each variable has a number of key dimensions identified in terms of polar positions characterizing organizational systems that are closed/stable/mechanistic as opposed to open/adaptive/organic.

Consistent with Kast and Rosenzweig's position that contingency views should lead to "organizational designs and managerial actions most appropriate for specific situations," Newman (1971) points out that the design of the management structure must fit the strategy of the organization. He sees a true integration of strategy and structure as requiring "adjustments in planning, leading, and controlling, as well as organizing" (processes that comprise the management design). Management design and strategy are matched by focusing on the intervening variable of the technology used to convert various resources into goods and services for consumers. Newman proposes "moving first from strategy to character of work, and then from work to management design." The result is a management design that is contingent on the organization's strategic choices.

Bowers et al. (1975) discuss matching organizational problems, characteristics, and intervention strategies to effect change. They use a theoretical 3-dimensional model in an attempt to classify management problems and management strategies according to the causes that result in problems. In addition, implications for change agents in the field are discussed. The fundamental principle of organizational change acknowledges that the intervention must match the nature of the organizational problems and their causes as well as the conditions and practices of the organization. Also stressed is the need for problem diagnosis and measurement of organizational functioning and evaluation studies of change.

Taking the contingency conceptualization of management a step further, Luthans and Stewart (1977) propose a general contingency theory of management comprising three factors: environmental (E), resources (R), and management (M). Two of these variables may interact to produce situational ($E \times R$), organizational ($M \times R$), and performance criteria ($M \times E$) variables; and all three, to give an indication of the entire system performance ($E \times R \times M$). From the managers' point of view, this model suggests that the manager must work creatively within the environmental constraints and resources to optimize organization and performance criteria and to produce desired system performance.

Luthans and Stewart suggest that their conceptual framework could be used to show the functional relationships among system variables and to construct a set of diagnostic instruments. They feel that this would provide the manager with a "powerful tool for diagnosis of organizational systems and implementation of planned change designed to improve performance." Problem diagnosis would eventually lead to improved selection of intervention strategies by managers, since they would choose the strategy most likely to affect contingent states of the organizational system.

Objective

The long-term purpose of this research and development effort is to develop a tested array of management techniques to ameliorate middle management problems in Navy settings. The purposes of this effort were to (1) identify the organizational problems perceived by Navy managers, (2) describe available managerial techniques, and (3) provide a conceptual framework and empirical model for designing organizational change studies.

APPROACH

In planning research on the strategies available to managers for improving organizational performance, the contingency perspective suggests the following:

1. The organization must be conceived as a complex, multivariate system, in which different departments may have specific problems. Managers, in their role as decision makers, must utilize various resources available to them in each specific situation to determine what actions should be taken.
2. The problems perceived by managers are aspects of the interaction of system variables. The application of management techniques attempts to control factors that determine or contribute to system performance.
3. Thorough problem diagnosis is necessary, and it should be comprehensive rather than narrow in scope, so that the effectiveness of management techniques on system performance can be evaluated.
4. The context of problems, including the organizational environment, internal and external situational factors, organizational values, and departmental interdependencies, must be understood.
5. A contingency perspective is required in selecting a management technique to correct problems. This means matching a technique to a specific problem taking into account the properties of the organization.
6. Evaluation of corrective management techniques must be comprehensive, encompassing effects on a wide array of problems and including side effects of the management technique. Evaluation requires reliable measurement of problems in terms of behaviors and performance with adequate sensitivity to detect changes following intervention.

These considerations form the basic framework for testing the effectiveness of particular management techniques when applied to management problems. The management problems and techniques may be organized as the rows and columns of a matrix (see Figure 1). The rows (P_1 - P_n) represent a set of problems; while the columns (T_1 - T_m), a set of techniques. Each cell of the matrix represents a particular management technique

applied to a particular management problem at the organizational site. The cell entries are measures of changes in organizational behavior and performance on both process and outcome operational indices and are represented by (O_1, O_2) . Change is determined by comparing outcomes prior to (O_1) and following (O_2) an intervention. Due to the very large number of potential problems and techniques, the subsequent task was to reduce systematically the number of management problems and techniques to be tested.

		MANAGEMENT TECHNIQUES					
		T_1	T_2	.	.	.	T_m
MANAGEMENT PROBLEMS	P_1	O_1, O_2	..	..	..	..	O_1, O_2
	P_2	:					:
	.	:					:
	.	:					:
	.	:					:
	.	:					:
	.	:					:
	P_n	O_1, O_2	..	..	..	..	O_1, O_2

Figure 1. A conceptual Management Problems x Technique Matrix for selecting management strategies to be evaluated.

ANALYSIS OF MANAGEMENT PROBLEMS AND TECHNIQUES

Management Problems

Since the early 1960s, students enrolled in management courses at the Naval Postgraduate School in Monterey, CA have written a total of 504 case studies on managerial problems generally found in middle level management in military (Navy) or mixed military/civilian organizations. A sample of these cases ($N = 50$) was content analyzed by subject matter experts to develop a coding scheme reflecting four major aspects of the problem described: (1) situation (e.g., organizational setting), (2) managerial functions involved, (3) antecedent or precipitating events leading to the problem (i.e., causes), and (4) behavioral manifestations (i.e., outcomes). (Appendix A provides examples of events leading to and manifestations of managerial problems.) A group of raters (10 Navy officers and one civilian executive), after participating in two 2-hour training sessions, used this coding scheme to content analyze the remaining case studies ($N = 454$). Each rater analyzed about 43 cases; about 10 percent of the cases were analyzed by two judges as a reliability check. The correlation coefficients computed between raters on the case study variables showed high reliability ($r = .8$ to $.9$). Fifty case studies were excluded from further analyses, because no management problem was identified.

In the next step, the raters grouped the problems described in the case studies by analyzing their causes and results using (1) a principal components factor analysis (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) with varimax rotation, and (2) an hierarchical clustering OSIRIS computer program (Johnson, 1967). Both procedures resulted in generally the same clustering of variables. Since there were still too many clusters and too many factors for inclusion in the problems/techniques matrix, however, the higher level clusters and the smaller factors were examined to determine the importance (frequency) of the variables associated with them. The clusters that accounted for a small percentage of the total variance and the factors that occurred least often were eliminated. This resulted in the eight clusters listed in Table 1.

The variables comprising these clusters generally reflect both causes and results, except for the cluster entitled "Performance" (#5), where the results are clearly of overriding importance. These eight clusters appeared to be representative of and broad enough to encompass most Navy managerial problems.

Management Techniques

Because of the large number of management techniques that are potential candidates for evaluation, they were classified according to their relative similarity in terms of their (1) pattern of effects, (2) underlying philosophy, and (3) required implementation procedures. Since patterns of effects have not yet been identified, it is obvious that such effects cannot be used. Also, philosophies cannot be used, since techniques having the same philosophy may differ in terms of both effects and implied management actions. Thus, it appears that classifying techniques according to required implementation procedures would be most satisfactory, assuming that similar implementing procedures produce similar results. This approach, however, requires that implementing procedures involve a clearly specified sequence of steps or actions that can be (1) taught in various leadership and management training programs and (2) applied by individual managers with appropriate training and minimal outside consultation.

Given this criterion, over 50 management techniques, drawn from a wide range of disciplines (e.g., management science and organizational behavior research), were analyzed to determine whether procedural implementation steps, called "critical action requirements," could be clearly defined. The 31 techniques that best met this criterion are described in Appendix B. These techniques were systematically grouped using the following method: All pairs of techniques ($N = 465$) were rated as to the similarity of their critical action requirements. Ratings were made on a 9-point scale, where 1 = Most Dissimilar and 9 = Most Similar. Finally, to determine clusters of techniques, the mean similarity ratings for all pairs were used as input to TORSCA, a nonmetric multi-dimensional scaling program (Young & Torgerson, 1967).

The scaling analyses were performed in several dimensions. The 4-dimensional solution provided a close fit when input and output orders of techniques were compared. The six major clusters of techniques that were identified by finding distances between techniques in the 4-dimensional space are presented in Table 2.

From the table, it can be seen that the grouped techniques are consistent with the disciplines from which they were drawn. For example, the organizational development techniques cluster together, while techniques from other disciplines, such as operations research, are in the management planning group. An exception to this, however, is the incentive management cluster, which includes both reward systems and responsibility accounting. Although these two techniques do not share the same academic lineage, they may be similar in terms of feedback or appraisal systems.

Table 1
Management Problem Clusters

Cluster/Comprising Variables	Frequency	Percentage
1. <u>Authority/Responsibility</u>		
Responsibility/authority not clear	183	40
Authority not appropriate for responsibility	89	20
Not aware of change in scope of position	91	20
Orders received from more than one source	90	20
Chain of command violated	110	24
Authority/responsibility conflicts not resolved promptly	120	26
Required to be both critic and assistant to superior	25	6
2. <u>Planning and Coordination</u>		
Inadequate coordination	116	37
Insufficient coordination	176	39
Inadequate planning	158	35
Inadequate administrative procedures	134	30
Inadequate work policies/procedures	128	28
Inappropriate individual or work group goals	124	27
3. <u>Initiative and Motivation</u>		
Lack of initiative	53	12
Inadequate supervision	164	38
Insufficient motivation	107	24
4. <u>Conflict, Cooperation, Communication</u>		
Inadequate communications	268	59
Public criticism	70	15
Lack of confidence/trust	128	28
Poor interpersonal relations	111	24
Dissatisfaction	154	34
Low morale	258	57
Lack of full cooperation/teamwork	119	26
Insufficient cooperation	109	24
5. <u>Performance</u>		
Degraded performance: quantity	77	17
Degraded performance: quality	180	40
Degraded performance: efficiency	175	39
Inadequate work design/flow	60	13
Degraded performance: timeliness	133	27
Degraded performance: mission accomplishment	125	28
6. <u>Supervisory Behavior</u>		
Supervisor not responsive	90	20
Discipline problems	58	13
Degraded performance: inspections	45	10
Lack of respect for supervisor	116	26
Poor habitability/appearance of work areas	18	4
7. <u>Job Skills</u>		
Insufficient job skills	73	16
Job-skill match	41	9
Low retention-high turnover	51	11
8. <u>External Policies</u>		
Compliance with external policies	90	20
Automation	11	2
Lack of job security	20	4
Undesirable personnel transfers	42	9

Table 2
Management Technique Clusters

Cluster	Techniques
1. Organizational Development	<ul style="list-style-type: none"> ● Survey feedback ● Team building ● Process consultation ● Grid organizational development ● Laboratory training ● Organizational mirror ● Role analysis ● Conflict management
2. Decision Analysis	<ul style="list-style-type: none"> ● Contingency theory ● Vroom-Yetton decision model ● Cost-benefit analysis ● Delphi ● Judgment analysis
3. Management Planning	<ul style="list-style-type: none"> ● Incremental analysis ● Program evaluation and review technique (PERT) ● Management information systems ● Kepner-Tregoe problem solving and decision making
4. Industrial Engineering	<ul style="list-style-type: none"> ● Work sampling ● Work flow analysis ● Work simplification ● Time management
5. Job Redesign	<ul style="list-style-type: none"> ● Job enrichment ● Job design
6. Incentive Management	<ul style="list-style-type: none"> ● Responsibility accounting ● Management cybernetics ● Management by objectives ● Performance appraisal ● Behavior modification ● Reward systems ● Scanlon plan

Problems x Techniques Matrix

The six management technique clusters and the eight management problem clusters were then incorporated into a Problems x Techniques Matrix, as shown in Figure 2. In this matrix, each cell represents organizational outcomes prior to and following application of a specific management technique to a particular management problem. The rows and columns of the matrix may be prioritized further by rating problem clusters in terms of frequency of occurrence and severity of impact on mission performance; and the techniques, in terms of the likelihood that they will be useful in Navy settings. Thus, when considering which cells to test, one quadrant of the matrix may be identified as the high priority segment, applying the criteria of importance and feasibility.

		MANAGEMENT TECHNIQUES					
		ORG. DEVELOPMENT	DECISION ANALYSIS	MGT. PLANNING	INDUSTRIAL ENGINEERING	JOB REDESIGN	INCENTIVES
MANAGEMENT PROBLEMS	AUTHORITY	o_1, o_2	..	..	..	..	o_1, o_2
	PLANNING	:					:
	MOTIVATION	:					:
	COOPERATION	:					:
	PERFORMANCE	:					:
	SUPERVISORY	:					:
	JOB SKILLS	:					:
	POLICIES	o_1, o_2	..	..	..	..	o_1, o_2

Figure 2. Empirical Management Problems x Techniques Matrix.

DISCUSSION AND CONCLUSIONS

In a simple contingency approach, a cell entry would indicate the usefulness of a management technique applied to a particular management problem. In a more realistic approach, however, it must be recognized that the entire array of problems may exist in varying degrees in any given organization. Further, the impact of a management technique is not necessarily limited to a single aspect of organizational functioning. Therefore, comprehensive assessment of organizational functioning prior to and following intervention is appropriate for evaluating the effectiveness of a management technique in a contingent fashion. Thus, for instance, one may avoid the erroneous conclusion that incentives should be chosen to solve motivational problems, only to find that this holds true only if supervisory problems are not present to attenuate the effects of incentives.

In full organizational assessment, each organizational unit is assessed on a wide variety of problems. The evaluation of a particular management technique is no longer

represented by a cell but, more accurately, by an entire column of cells, corresponding to a profile or configuration of organizational problems. If the problems are classified with respect to performance, then interventions may focus on primary problems, with some attention being paid to secondary ones.

Given an organizational problems profile, an appropriate management technique or combination of techniques must be selected to apply to that profile. The predicted and/or obtained effects of each technique on various problem categories will indicate those that may be successful. Thus, each management site serves to test the hypothesized effects of the selected management technique(s) on certain primary problems, and provides further information about the pattern of effects across the remaining problems. In essence, each site produces information for a column of cells in the problem/technique matrix. Several tests of a particular technique on various problem profiles would provide information indicating how useful that technique would be for a variety of problem profiles. Since more than one technique will be studied, a manager could use this information to choose the more appropriate technique in a particular case. Further research would be aimed at providing the manager with the data required to establish a pay-off matrix to enable him to choose the optimum technique to solve his unique array of problems. Therefore, it is important that the assessment of management problems be comprehensive to (1) increase the probability of choosing the most appropriate technique and (2) evaluate the effectiveness of a technique by measuring all aspects of organizational functioning prior to and following an intervention.

FUTURE RESEARCH CONSIDERATIONS

1. Evaluation studies of management techniques should be conducted in Navy organizations. Such studies should include a diversity of organizational types and management problems.
2. Organizational assessment instruments should be developed and integrated into future organizational research efforts to diagnose management problems and evaluate the effectiveness of management techniques.

REFERENCES

- Bowers, D. G., Franklin, J. L., & Perorella, P. A. Matching problems, precursors, and interventions in OD: A systemic approach. Journal of Applied Behavioral Science, 1975, 11, 391-409.
- Burns, T., & Stalher, G. M. The management of innovation. London: Tavistock, 1961.
- Galbraith, J. Designing complex organizations. Reading, MA: Addison-Wesley, 1973.
- Galbraith, J. Organizational design. Reading, MA: Addison-Wesley, 1977.
- Johnson, S. C. Hierarchical clustering schemes. Psychometrika, 1967, 32, 241-254.
- Kast, F. E., & Rosenzweig, J. E. Contingency views of organization and management. Chicago: Science Research Associates, 1973.
- Lawrence, P. R., & Lorsch, J. W. Organization and environment: Managing differentiation and integration. Boston: Harvard, 1967.
- Luthans, F., & Stewart, T. I. A general contingency theory of management. Academy of Management Review, 1977, 2, 181-195.
- Newman, W. H. Strategy and management structure. Journal of Business Policy, Winter 1971/1972, 56-66.
- Perrow, C. Organizational analysis: A sociological viewpoint. Belmont, CA: Wadsworth, 1970.
- Schmuck, R., & Miles, M. Organizational development in the schools. Palo, Alto, CA: National Press Books, 1971.
- Thompson, J. D. Organizations in action. New York: McGraw-Hill, 1967.
- Woodward, J. Industrial organization: Theory and practice. London: Oxford University Press, 1965.
- Young, F. W., & Torgerson, W. S. TORSCA: A FORTRAN IV program for Shepard-Kruskal multidimensional scaling analysis. Behavioral Science, 1967, 12, 498.

APPENDIX A
EXAMPLES OF EVENTS LEADING TO AND BEHAVIORAL
MANIFESTATIONS OF MANAGERIAL PROBLEMS

ANTECEDENT EVENTS/CONDITIONS

1. Responsibility/authority not clear--Definite and clear-cut responsibilities should be assigned to each executive.
2. Authority not appropriate for responsibility--Responsibility should always be coupled with corresponding authority.
3. Not aware of change in scope or responsibility of a position--No change should be made in the scope or responsibilities of a position without a definite understanding to that effect on the part of all persons concerned.
4. Orders received from more than one source--No executive or employee, occupying a single position in the organization, should be subject to definite orders from more than one source.
5. Chain of command violated (top-down)--Orders should never be given to subordinates over the head of a responsible executive. Rather than do this, the officer in question should be supplanted.
6. Public criticism--Criticism of subordinates should, whenever possible, be made privately. In no case should a subordinate be criticized in the presence of executives or employees of equal or lower rank.
7. Authority/responsibility conflicts not resolved promptly--No dispute or difference between executives or employees as to authority or responsibilities should be considered too trivial for prompt and careful adjudication.
8. Personnel actions by responsible superior not approved by his immediate superior--Promotions, wage changes, and disciplinary action should always be approved by the executive immediately superior to the one directly responsible.
9. Individual required to be both critic and assistant to his superior--No executive or employee should be required or expected to be both an assistant to and critic of a superior.
10. Assistance and facilities not available for independent check on inspectable work--Any executive whose work is subject to regular inspection should, whenever practical, be given the assistance and facilities necessary to enable him to maintain an independent check on the quality of his work.
11. Failure to delegate authority/responsibility--Superior does not delegate authority/responsibility to his subordinates, but rather seems to do "everything" himself.
12. Lack of initiative--Individual performs only those tasks directly assigned. He does not seek additional work, responsibilities, or better ways of performing present assignments. He does not "aggressively" accomplish assigned tasks.
13. Inadequate coordination--The necessary coordination between two or more individuals or groups is not attained so that mutually interdependent tasks may be successfully completed.

14. Lack of full cooperation/teamwork--The amount of cooperation or sense of teamwork, either within the group or between work groups, is not sufficient for the attainment of common or individual objectives in a reasonable manner.
15. Inadequate communications--The amount or direction of information flow is below desired levels to meet the work-related needs of individuals or groups.
16. Inappropriate work or group goals--An individual or work group does not possess appropriate mission or task-oriented goals and objectives. Either definitive goals are not present, or the goals that are emphasized are not relevant.
17. Lack of confidence/trust--Individuals do not possess a reasonable level of confidence and trust in each other. This condition may be unidirectional or bidirectional.
18. Inappropriate supervision: Too close--A supervisor's interactions with his work group are perceived to be too constraining by work group members. For example, members may feel that the superior checks on work progress too frequently, specifies too many details on how to accomplish assigned tasks, or is constantly "meddling" in the work group.
19. Inappropriate supervision: Not enough--Supervisor does not adequately attend to his work group. Poor performance goes unnoticed; deficiencies are not corrected; basic supervision is just not present.
20. Inappropriate supervision: Not task oriented--Supervisor does not adequately emphasize mission or goal-oriented behaviors. Rather, supervisor emphasizes nontask related behaviors and goals in his work group (e.g., time off vs. task accomplishment).
21. Accountability lacking--Individuals or groups are not made to be directly accountable for their work performance. Instead, individuals feel that performance (good or bad) goes unnoticed and unrecorded either by superiors or by the "system."
22. Compliance with external policies, rules, regulations, etc.--Policies, rules, regulations, etc. must be complied with without regard to their desirability or impact on the individual or work group. Such undesirable situations may not be totally anticipated by the individuals involved.
23. Personality problems--Individuals cannot function together effectively due to personality conflicts between two or more people. The focus of the personality differences may be centered with one individual or with a number of individuals. The extent of the personality conflicts may range from simple differences or personality characteristics to complex, "abnormal" behaviors.
24. Automation (computer, etc.)--Difficulties arise because of, or are associated with, the introduction of some form of automation into the work setting. Examples of this include computerization of inventory records and reorder procedures.
25. Lack of job security--Individuals or groups perceive that their job security is threatened. The perception of threatened job security is the essential component, not the actual situation.
26. Insufficient job skills--Individuals or groups do not possess the necessary skills or knowledge to perform their work adequately. This occurs even though, for their

classification or rate, they should be qualified to satisfactorily perform the work assigned.

27. Inadequate job-skill match--The reasonably expected skills and abilities of job incumbents, given their assigned positions or billets, do not adequately meet the demands of the job. An extreme example of this would be assigning PN2 billets to a work group in which the actual work requires the skills and abilities of ET1s.
28. Physical separation (of work group)--Members of the work group, either the supervisor or one or more group members, are physically separated to the extent that this contributes to dysfunctional behaviors.
29. Inadequate work design/flow--The manner in which work procedures or methods have been set up leads to nonoptimum behaviors that have a negative effect. This condition could occur even though individual work group members may be performing adequately within the constraints of the existing work design.
30. Inadequate work policies/procedures--Work policies and procedures may be inefficient or not appropriate to job demands, or they may not be clearly specified or understood by work group members.
31. Personal problems (nonwork related)--An individual has personal problems in his nonwork activities that carry over to the job and affect work-related behaviors. Examples might be death in the family, divorce, financial problems, etc.
32. Alcohol/drug abuse--An individual's use of alcohol or other drugs contributes to undesirable work behaviors.
33. Inadequate planning--A manager has not sufficiently thought out and planned job-related activities to the extent that adverse effects are observed.

BEHAVIORAL MANIFESTATIONS

1. Degraded performance: Quantity--The amount of work or output produced by an individual or group is below desired levels.
2. Degraded performance: Quality--The work produced or processed by an individual or group is below desired standards for quality.
3. Degraded performance: Timeliness--The output from an individual or group, although it may be produced in a large quantity with satisfactory quality, is nevertheless not produced in a timely manner to meet desired suspense or target dates.
4. Degraded performance: Efficiency--The expenditure of resources (time, money, material, effort, etc.) to accomplish assigned tasks is in excess of desired expenditures, given the nature of the task or benefits accrued from task accomplishment.
5. Degraded performance: Inspections--The actual or expected outcome of formal inspections is below a desired level.
6. Degraded performance: Mission accomplishment--An individual or group does not, or expects not to, reach a desired level of mission development.
7. Degraded performance: Equipment failure/maintenance problems--Equipment failure or adequate maintenance on equipment is not at desired levels.
8. Insufficient motivation--An individual or group does not appear to be properly motivated to perform task-related activities.
9. Insufficient initiative--An individual or group, although working relatively hard at specific tasks, does not appear to show sufficient initiative to accomplish the overall task or objective. For example, an individual may be very motivated to prepare for an operation, work diligently with obvious preparations, but not take the initiative to go beyond what he perceives to be his limited area of immediate concern.
10. Indecisiveness--An individual does not appear to be capable of making a definitive, firm decision. Planned activities are frequently changed, although the situation has not.
11. Dissatisfaction--An individual or group expresses unhappiness or dissatisfaction with specific aspects of their work situation over and above the amount of "griping" considered normal or desired.
12. Low morale--The level of positive feelings, good will, desire to be associated with the group, etc., in a work group is below desired levels.
13. Poor interpersonal relations--The quality of interpersonal interactions is below desired levels. Individuals do not seem to get along; they tend to treat each other as adversaries at one extreme or as nonentities at the other.

14. Discipline problems (military customs and courtesy, nonjudicial punishment (NJP), etc.)--The occurrence of discipline-related incidents, such as nonacceptance of military customs and courtesy, NJP, fighting, sloppiness, overt disrespect for superiors, is above desired levels.
15. Low retention/high turnover--The desire for individuals to remain with the organization is not at desired levels. This would be reflected in low retention rates in the group for military personnel, high turnover for civilian personnel, and high requests for transfers for both groups.
16. Unusual absenteeism--The amount of absenteeism from assigned duties is above desired levels. Such absenteeism may be reflected in excessive unauthorized absences, use of sick leave, or nonpresence at assigned tasks although present elsewhere in the activity.
17. Poor habitability/appearance--The living conditions or physical appearance of an area are below desired levels.
18. Unsafe conditions/accidents--Working conditions do not meet desired standards for safety, given the nature of the work, or the frequency of accidents is above normal or desired levels.
19. Health adversely affected--The health of one or more individuals, other than by accidental injuries, is adversely jeopardized due to the work situation.
20. Undesirable personnel assignments/transfers--A manager is required--whether or not he agrees with the action--to reassign, transfer, or accept an individual or individuals into or out of his work group.
21. Inadequate administration procedures--Administrative procedures are perceived to be deficient (e.g., too burdensome, ineffective, unclear, irrelevant).
22. Fiscal irresponsibility--The handling of money, contracts, etc., does not conform with desired levels of responsibility and prudent judgment.
23. Superior not responsive--A superior does not appear to be responsive to inputs from others--superior, peers, or subordinates. He may not listen to input or, if he listens, may not appear to react to the input.
24. Lack of respect for superior--The amount of respect for a superior by his subordinates is not at a desired or appropriate level. An individual may agree or disagree with actions taken by his superior, but yet not respect his superior.
25. Interference with work group--A superior, or other outside individuals, interferes too much with the performance and activities of a work group.
26. Insufficient coordination--The amount of coordination between two or more individuals or groups to accomplish specific tasks is not at a desired level.
27. Insufficient cooperation--The amount of cooperation between two or more individuals or groups is not at a desired level. Cooperation implies a willingness to help or assist on a preplanned or on an as needed basis.

28. Discrimination complaints (racial, sex, etc.)--Formal or informal complaints occur revolving around issues of discrimination due to race, sex, religion, etc.
29. Racial problems/incidents--Incidents or problems occur that are racial in nature. Such incidents may or may not lead to formal or informal complaints by one or more of the parties involved.

APPENDIX B
DESCRIPTIONS OF MANAGEMENT TECHNIQUES

DESCRIPTIONS OF MANAGEMENT TECHNIQUES

1. Responsibility Accounting

This technique (a) identifies areas of responsibility for individuals, (b) delineates the extent to which various factors affecting that responsibility are controllable, (c) identifies behavioral implications of dealing with the situation and develops a consensus about performance variables to be measured, and (d) collects performance information to be used for periodic review and action.

2. Incremental Analysis

Given a set of alternative possible actions and accurate forecasts of the expected outcomes and inputs associated with each alternative, this technique (1) establishes a minimum acceptable outcome to input ratio, (b) ranks alternatives in ascending order of inputs, always including "do nothing" as an option, (c) selects that alternative with the lowest input and computes its output-input ratio for comparison with the minimum acceptable ratio, (d) selects the alternative with the next lowest input and computes the output-input ratio for that alternative, (e) compares the ratio in step d to the minimum acceptable ratio or the ratio for the prior alternative, whichever is greater, (f) retains the current alternative if its ratio is greater than the comparison value, and (g) repeats steps d, e, and f as needed until all alternatives are evaluated.

3. Behavior Modification

This technique (a) identifies target behaviors for change, (b) charts their current frequencies, (c) does a function analysis to determine the antecedents and consequences of each target behavior, (d) develops a plan to modify behavior through a combination of reinforcement, punishment, extinction, modeling, and shaping principles, and (e) implements and monitors the plan, revising as required. The plan takes into account contextual factors such as organizational structure, process, technology, etc.

4. Survey Feedback

This technique (a) prescribes a normative model of how an organization should work, (b) develops indices to measure the current state of the organization in terms of this model, (c) compares the current state to the normative model's specified optimum to identify problems, and (d) employs the discrepancies as a basis for planning improvement. Plans are presumably implemented, but they may not be regarded as integral to survey feedback as they are tailored to the organization and the problem and are not directly determined by the normative model or the specific problems identified.

5. Scanlon Plan

This technique (a) establishes a baseline for labor costs per unit production, (b) develops a plan that determines the size of a bonus pool on the basis of the difference between baseline and actual labor costs for production during a given time period and provides for allocation of the bonus pool to employees, (c) solicits employee approval, and (d) implements the plan with appropriate monitoring, accounting, and grievance procedures.

6. Team Building

This technique (a) identifies a specific work group as requiring team developing training, (b) provides the work group with training in the diagnosis of group process problems, (c) has the group diagnose its problems, and (d) provides a variety of activities designed to build skills related to the problems that are identified. Generally, the group will be working with an outside expert in the training and skill development areas.

7. Project Evaluation and Review Technique (PERT)

This technique (a) establishes a date by which a program objective must be accomplished, (b) determines the events required to achieve the objective, (c) places these events in a temporal sequence, (d) determines the activities required to make the transition from one event to the next, (e) obtains expert estimates of the time required for each activity given specified resources, (f) establishes the time required to complete the longest sequence of activities in the project and compares that to the time available, (g) considers reallocation of resources or other changes in plans if the time required exceeds the time available, (h) implements the plan with appropriate monitoring and progress reviews when an acceptable plan is developed, and (i) revises plans as needed as the project progresses.

8. Vroom-Yetton Decision Processes Model

This technique (a) prescribes a normative model of how decisions should be made, (b) evaluates a given problem by yes-no answers to seven questions dealing with the importance of quality of the decision, subordinates' acceptance of the decision, and the possible effect of participation on the decision, (c) based on a given flow chart, determines which of a set of decision-making styles are feasible for the particular problem, and (d) selects a decision style from the feasible set on the basis of a criterion of minimum man-hours spent making the decision or personnel development, emphasizing participation.

9. Laboratory Training

This technique (1) selects a group of personnel who are to develop new group process skills (these personnel are not necessarily in the same work group, but may be), (b) provides a "trainer" who meets with these people at a site away from the work setting, (c) starts with a meeting with no agenda or leader, and (d) allows the group to deal with the situation using old behavior patterns for treating ambiguity and lack of structure. The training agent provides insights on the processes of the group and encourages the development of supportive structure and a consensus approach to problem solving; if requested, he may give information on pertinent group processes and possible ways of changing them. Group members try out new behavior patterns and employ them in developing structure and setting up and following an agenda. Finally, group members return to work site and attempt to use the skills and perceptions learned.

10. Contingency Theory

This technique (a) analyzes the organizational situation in terms of task demands facing the organization and the needs of people in the organization and develops a normative prescription of organizational characteristics that fit these constraints, (b) develops a description of the current state of the organization with respect to these characteristics to define organizational problems, (c) engages top management in a discussion of the problems until a consensus is achieved concerning problems to be

addressed ("shared diagnosis"), (d) attempts to identify "levers" that are possible means of changing the organization, (e) considers combinations of levers to comprise a plan, (f) develops a sequence and schedule for the selected combination of levers, (g) implements the plan, and (h) evaluates the progress of the plan and initiates a new cycle of problem definition.

11. Management Information Systems

This technique (a) selects an area of decision making as a target, (b) identifies available information flows, (c) determines required information flows, (d) designs a system for input, storage, and output of the required information, explicitly recognizing that the system must be useful to decision makers, (e) develops a data base for the system, (f) orients users to system purposes, functioning, and limitations, and (g) implements the system with monitoring for debugging purposes.

12. Process Consultation

This technique (a) selects an expert to teach diagnostic and problem-solving skills to employees, (b) focuses on the human processes of the organization and develops data gathering, data feedback, and information conveyance skills for diagnosis, and (c) works on development of human process skills as a part of the process of correcting the problems identified. The training and development aspects of the technique are largely done on a "learn by doing" basis with the outside expert providing insight and expertise to help the employee group develop its own capacities.

13. Operations Research

This technique (a) identifies a problem, (b) determines what organizational processes or environmental factors contribute to that problem, (c) classifies the problem as one that is suited to solution using standard mathematical models or requiring either a simulation or experimental research approach, (d) gathers the information necessary for constructing the mathematical model or simulation as required, (e) constructs and tests the model with tests for sensitivity, accuracy of prediction of past events, etc., (f) employs the model to derive solutions to the problem, (g) presents the solutions to management with an explanation of assumptions and limitations of the model, and (h) where appropriate, sets up a control/reporting system to monitor variables in the model for its everyday use. For the purposes of the present exercise, experimental research is not considered an aspect of operations research, but is included in step c to show all the alternatives at that point.

14. Kepner-Tregoe Problem Solving and Decision Making

This technique (a) recognizes problems through comparison with a standard, (b) establishes priorities for problems, (c) makes precise identification of deviations from standard, (d) identifies factors distinguishing problem from normal situation, (e) specifies relevant changes that may be the causes of problems, and (f) evaluates the importance of these potential problem causes by comparing the facts about changes to the facts included in the specification of the problem. The technique then moves into the decision-making phase and (a) establishes the objectives for decision, (b) classifies objectives by importance, (c) develops alternative actions, (d) evaluates these alternatives against objectives, (e) selects the alternative best able to satisfy all objectives, (f) explores possible adverse consequences of the tentative decision, and (g) develops preventive actions to avoid those adverse consequences.

15. Organizational Mirror

This technique (a) identifies a target group and two or more other groups to serve as "mirrors" for this group, (b) collects data concerning perceptions of human processes in the target group, (c) analyzes the data to identify problems, and (d) brings together representatives of all the involved groups and provides feedback from steps b and c. The "mirror" groups discuss their perceptions of the target group in the presence of the target group, but without its involvement, to clarify, understand, and expand on the problem statements. The target group discusses the comments of the "mirror" target group's understanding of the problems based on available information. Subgroups composed of people from the target group and the mirror groups then meet to define key problems for the target group. Finally, the key problems are reported to the total group, a master list is made, and plans developed to deal with them.

16. Grid Organizational Development

This technique (a) provides a prescriptive model of how to manage, (b) trains key organizational personnel in this model, (c) provides for trained managers to conduct in-company training for all the managers in the organization, (d) applies the model to the development of intragroup teamwork, (e) works on reducing win-lose conflict between groups, (f) develops an "ideal corporation model" that describes what the organization would be like if it were truly outstanding and excellent, (g) reorganizes to satisfy the ideal model, and (h) critiques progress, including the measurement and evaluation of the outcomes of previous phases to see what progress has been made and what difficulties and barriers remain, etc.

17. Role Analysis

This technique (a) has members of a work group indicate their expectations concerning work duties and behaviors for each group member, (b) analyzes the expectations to identify problems with ambiguity, conflict, or other factors that negatively affect performance, and (c) restructures roles and group procedures to eliminate difficulties.

18. Conflict Management

This technique (a) specifies some optimal, nonzero level of conflict for an organization, (b) analyzes the current situation to determine whether there is too much or too little conflict, (c) determines the impact of communication, structure, and group and individual process variables on current conflict levels, and (d) depending on the source of conflict or the reason why conflict is too low, develops a conflict alteration procedure that is then implemented.

19. Cost-Benefit Analysis

This technique (a) identifies a problem and constraints on the solutions to the problem, (b) searches out feasible alternatives given the constraints, (c) determines the expected inputs and outputs for each alternative, (d) converts both into monetary units, (e) determines a ratio of benefits to costs, (f) rejects any alternatives with a ratio of less than 1.00, (g) applies incremental analysis to select the best remaining alternative, (h) performs a sensitivity analysis to determine whether the desirability of the different alternatives changes with changes in any of the parameters of the decision, and (i) documents the assumptions, parameters, etc., for the decision.

20. Delphi

This technique (a) formulates a clear statement of the issue to be addressed, (b) identifies available options, (c) determines the initial positions of a panel of experts with respect to the issue, (d) evaluates the responses from step c, and (e) feeds back information to participants who then reevaluate their positions and give reasons for them if they are significantly different from the norm. A second round of feedback is then given, including the reasons for the exceptional positions. The evaluation-feedback-response cycle is repeated until consensus or a planned number of cycles is reached.

21. Management Cybernetics

This technique (a) develops an overall model of the management task and setting by a multistage process, (b) uses the final model to identify essential variables to control, (c) establishes standards for personnel behavior that will produce the required control, (d) develops and establishes the required information systems to monitor behavior, (e) develops decision rules and procedures to deal with behavior that deviates from standard, and (f) applies the fully developed system.

22. Management by Objectives (MBO)

This technique (a) establishes major objectives for the organization, and (b) develops clearly defined, nonoverlapping statements of responsibility for personnel. Supervisor and subordinate cooperatively (a) set measureable, challenging goals related to the major objectives and the area of responsibility for the subordinate, (b) determine priorities for the goals and relate each goal to others, (c) specify means of measurement time periods for measurement, and (d) have subordinate develop a plan for achievement of goals. Supervisor and subordinate (a) review the plan(s) and adjust them as needed, (b) implement plan(s), and (c) review performance at proper time(s) to provide correction, adjustment, and appraisal.

23. Work Sampling

This technique (a) identifies a set of repetitive, consistent, quantifiable tasks, (b) selects those with a large enough volume to be of interest, (c) identifies the sequence in which tasks are accomplished, (d) develops a sampling procedure to specify the number of observations to be made and their timing for each point in the sequence, (e) makes the planned observations, recording the time required to accomplish the observed task, (f) determines the mean length of time and the variability in time required to perform each task, (g) if necessary, develops a weighting system that takes into account individual differences in skill and/or training level for the task, (h) uses the data to establish time standards for the tasks, and (i) establishes the method of use for the standards and applies them.

24. Judgment Analysis (JAN)

Given a need for a policy that requires ranking alternatives, this technique (a) determines the information or characteristics required to establish such a ranking, (b) selects real cases or constructs artificial cases representing a wide range of combinations of different characteristics, (c) has a number of expert judges rank order the instances, (d) develops a regression equation for each judge to determine the weighting given to different characteristics, (e) classifies judges into groups based on the pattern of regression weights for individuals, (f) presents results to judges to have them reconcile the differences between groups, (g) applies the consensual weighting to a second set of cases

to determine its adequacy, and (h) applies the final weighting scheme to real policy situations as a "stand alone" device or in combination with human judgment.

25. Reward Systems

Based on preliminary discussion with management and employees, this technique (a) decides what behaviors should be reinforced and what reinforcers are available, (b) examines the nature of the tasks to be done and decides whether the reward system should be individual, group, or supervisory in nature, (c) establishes performance standards and eliminates wage inequities, (d) develops an agreement that specifies payoffs, protections, and plans for the reward system, (e) trains supervisors to help employees maximize earnings and to deal with grievances promptly, (f) implements the system at a time when employment is low, but about to rise, and (g) monitors early implementation to check on performance barriers.

26. Performance Appraisal

This technique (a) establishes the purpose of the appraisal system (e.g., promotion decisions, need for personal development, etc.), (b) determines the job activities and or results that are pertinent to this purpose, (c) identifies and validates methods of measurement for target activities/results, (d) specifies who is to perform appraisal and the procedures to be employed, (e) establishes an appraisal schedule and develops a support system to maintain the information necessary, and (f) implements the appraisal system with reviews to modify procedure, scheduling, purpose, etc., as needed.

27. Job Enrichment

This technique (a) selects jobs that are characterized by poor attitudes of incumbents, an effect of motivation on performance, lack of constraint due to prior investment in industrial engineering, and little opportunity for improvement through change of the physical setting and other such factors, (b) develops a list of ways in which jobs can be altered to add new and more difficult tasks, give workers more authority, provide autonomy with accountability, allow specialization as a means for developing expertise, provide an opportunity to do a whole, identifiable piece of work, and give feedback about importance of the work, (c) screens the list to ensure that it does not include suggestions that merely add more of the same old tasks to the job and does not include inoperable generalization (e.g., "give more autonomy"), (d) combines the suggestions to produce job changes that embody the principles described in (b) above, (e) sets up a controlled experiment to test the effects of the redesign on productivity, and (f) revises and/or implements the enrichment as appropriate on the basis of the experimental results.

28. Work Flow Analysis

Given a known sequence of tasks (work flow) with analyzable characteristics, this technique (a) identifies distinct subsequences of tasks (unit flows) that are distinguishable from one another by differences in physical location, timing of the activities involved, and other quantifiable differences, (b) identifies "stress" points in the organization by locating irregularities in the rate of flow of work or interaction difficulties between personnel, (c) alleviates stress by altering organization design, and (d) implements the new design. In c above, organization design is altered by placing unit flows under single supervisors, designing second level supervision to bridge discontinuities in the overall work flow without developing unmanageable spans of control, and developing staff functions for setting standards and procedures and auditing results.

29. Work Simplification

This technique (a) obtains a clear statement of the objective to be achieved through simplification, (b) collects complete information on equipment used, current production methods, including task sequence, and materials employed in the work process, (c) combines this information into a work process chart indicating the sequence of tasks and the means by which they are achieved, (d) examines work process chart to determine which tasks are unnecessary, which tasks might be done more efficiently, and where tasks might be grouped differently for greater efficiency, (e) redesigns the task structure by eliminating unnecessary tasks, changing the methods employed to do them, or regrouping tasks, (f) details the new jobs/techniques in writing, (g) reviews and tests the new method to establish that it produces improvement, (h) does necessary training of personnel, and (c) installs and monitors the new system.

30. Time Management

This technique (a) develops a time inventory to establish how time is spent, (b) describes the inventory categories in terms of the typical urgency of the activity or task, the level at which it is now accomplished (i.e., by the manager himself, by delegation, or left undone), and its priority level, (c) groups tasks/activities to consolidate related areas for concentrated effort, (d) develops a time schedule for accomplishing tasks/activities, (e) evaluates the schedule daily to become more aware of how time is spent and to analyze usage so that it may be improved, (f) continues the time inventory and compares pre- and post-scheduling inventories to evaluate the impact of scheduling on the completion of managerial tasks, and (g) repeats the above to continue improvement.

31. Job Design

This technique changes the structure of jobs to improve overall productivity by (a) organizing workers into functional small work groups to identify and solve work problems and to set goals, (b) selecting a single job that is significant to the organization where attitudes are poor, job context factors are costly, and motivation will improve performance, (c) determining possible changes in job content (e.g., how tasks get done, what materials are used, and how the work is structured), and/or job context or organizational "climate" (e.g., the level of pay, nature of supervision, physical layout of the work space, and personnel policies), (d) setting up a controlled experiment utilizing those changes intended to increase job efficiency and performance, and (e) evaluating and revising design changes based on their impact on productivity, return on investment, and solution of work group problems.

DISTRIBUTION LIST

Chief of Naval Operations (OP-102) (2), (OP-11), (OP-14), (OP-15), (OP-987H)
Chief of Naval Research (Code 450) (4), (Code 458) (2)
Chief of Information (OI-2252)
Director of Navy Laboratories
Chief of Naval Education and Training (N-5)
Commander, Naval Military Personnel Command (NMPC-6), (NMPC-013C)
Technical Library, Air Force Human Resources Laboratory (AFSC), Brooks Air Force Base
Army Research Institute for the Behavioral and Social Sciences (Reference Service)
Defense Technical Information Center (12)